

CLAIMS

We claim:

1. A pre-fiber composition, comprising:
a first fiber constituent having a first melting point;
5 a second fiber constituent having a second melting point; and
a gelling agent that solvates at least one of the first fiber constituent or the second
fiber constituent, wherein the gelling agent significantly reduces co-
polymerization of either of the constituents in the composition.
2. The pre-fiber composition of claim 1, comprising at least one additional fiber
10 constituent having a melting point that is different from the first melting point and the
second melting point.
3. The pre-fiber composition of claim 1, wherein at least one of the first fiber constituent
and the second fiber constituent comprises at least one amide-based polymer.
4. The pre-fiber composition of claim 3, wherein the at least one amide-based polymer
15 comprises a nylon compound.
5. The pre-fiber composition of claim 4, wherein the nylon compound comprises nylon-
6.
6. The pre-fiber composition of claim 4, wherein the nylon compound comprises nylon-
6,6.
- 20 7. The pre-fiber composition of claim 4, wherein the nylon compound comprises a co-
polymer.
8. The pre-fiber composition of claim 7, wherein the co-polymer comprises nylon-6,6,6.
9. The pre-fiber composition of claim 1, wherein the at least one gelling agent comprises
lactam.
- 25 10. The pre-fiber composition of claim 9, wherein the lactam comprises caprolactam.

11. The pre-fiber composition of claim 1, wherein the first fiber constituent comprises nylon-6,6,6, the second fiber constituent comprises nylon-6, and the gelling agent comprises a lactam-based compound.
12. The pre-fiber composition of claim 1, wherein the at least one gelling agent comprises less than 50 weight percent of the composition.
13. The pre-fiber composition of claim 12, wherein the at least one gelling agent comprises less than 40 weight percent of the composition.
14. The pre-fiber composition of claim 13, wherein the at least one gelling agent comprises less than 30 weight percent of the composition.
15. The pre-fiber composition of claim 14, wherein the at least one gelling agent comprises less than 20 weight percent of the composition.
16. The pre-fiber composition of claim 15, wherein the at least one gelling agent comprises less than 10 weight percent of the composition.
17. The pre-fiber composition of claim 16, wherein the at least one gelling agent comprises less than 5 weight percent of the composition.
18. A spun fiber comprising the composition of claim 1.
19. A carpet product comprising the spun fiber of claim 18.
20. A fiber, comprising:
 - at least two amide-based polymers, each having a melting point, wherein the melting point of one amide-based polymer is dissimilar to the melting point of a second amide-based polymer; and
 - a gelling agent that is compatible with at least one of the amide-based polymers, wherein the fiber comprises two differentiable melting points that are substantially similar to the melting points of each of the amide-based polymers.
21. A method of producing a pre-fiber composition, comprising:
 - providing a first fiber constituent having a first melting point;

providing a second fiber constituent having a second melting point, wherein the first melting point and the second melting point are dissimilar;

providing at least one gelling agent that is compatible with at least one of the fiber constituents; and

5 mixing the first fiber constituent, the second fiber constituent and the at least one gelling agent such that there is sufficient viscosity and sufficient melt strength in the composition so that it can be spun into a fiber and such that the first melting point and the second melting point in the fiber are substantially similar to their original values before mixing.

10 22. The method of claim 21, comprising providing at least one additional fiber constituent having a melting point that is different from the first melting point and the second melting point.

23. The method of claim 21, wherein at least one of the first fiber constituent and the second fiber constituent comprises at least one amide-based polymer.

15 24. The method of claim 23, wherein the at least one amide-based polymer comprises a nylon compound.

25. The method of claim 24, wherein the nylon compound comprises nylon-6.

26. The method of claim 24, wherein the nylon compound comprises nylon-6,6.

27. The method of claim 24, wherein the nylon compound comprises a co-polymer.

20 28. The method of claim 27, wherein the co-polymer comprises nylon-6,6,6.

29. The method of claim 21, wherein the at least one gelling agent comprises lactam.

30. The method of claim 29, wherein the lactam comprises caprolactam.

31. The method of claim 21, wherein the first fiber constituent comprises nylon-6,6,6, the second fiber constituent comprises nylon-6, and the gelling agent comprises a lactam-based compound.

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32. The method of claim 21, wherein the at least one gelling agent comprises less than 50 weight percent of the composition.
33. The method of claim 32, wherein the at least one gelling agent comprises less than 40 weight percent of the composition.
- 5 34. The method of claim 33, wherein the at least one gelling agent comprises less than 30 weight percent of the composition.
35. The method of claim 34, wherein the at least one gelling agent comprises less than 20 weight percent of the composition.
- 10 36. The method of claim 35, wherein the at least one gelling agent comprises less than 10 weight percent of the composition.
37. The method of claim 36, wherein the at least one gelling agent comprises less than 5 weight percent of the composition.
38. The method of claim 21, wherein mixing comprises blending.
39. The method of claim 21, wherein mixing comprises extruding.
- 15 40. The method of claim 21, further comprising heating the composition.
41. The method of claim 21, further comprising removing at least part of the at least one gelling agent after the mixing step.
42. A spun fiber formed using the method of claim 21.
43. A carpet product comprising the spun fiber of claim 42.